Volunteer Lake Assessment Program Individual Lake Reports

GREGG LAKE, ANTRIM, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,944	**Max. Depth (m):**	11	**Flushing Rate (yr^{-1})**	1.6
Surface Area (Ac.):	195	**Mean Depth (m):**	5.3	**P Retention Coef:**	0.57
Shore Length (m):	6,400	**Volume (m^3):**	4,199,000	**Elevation (ft):**	1053

TROPHIC CLASSIFICATION

Year	Trophic class
1978	OLIGOTROPHIC
1994	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

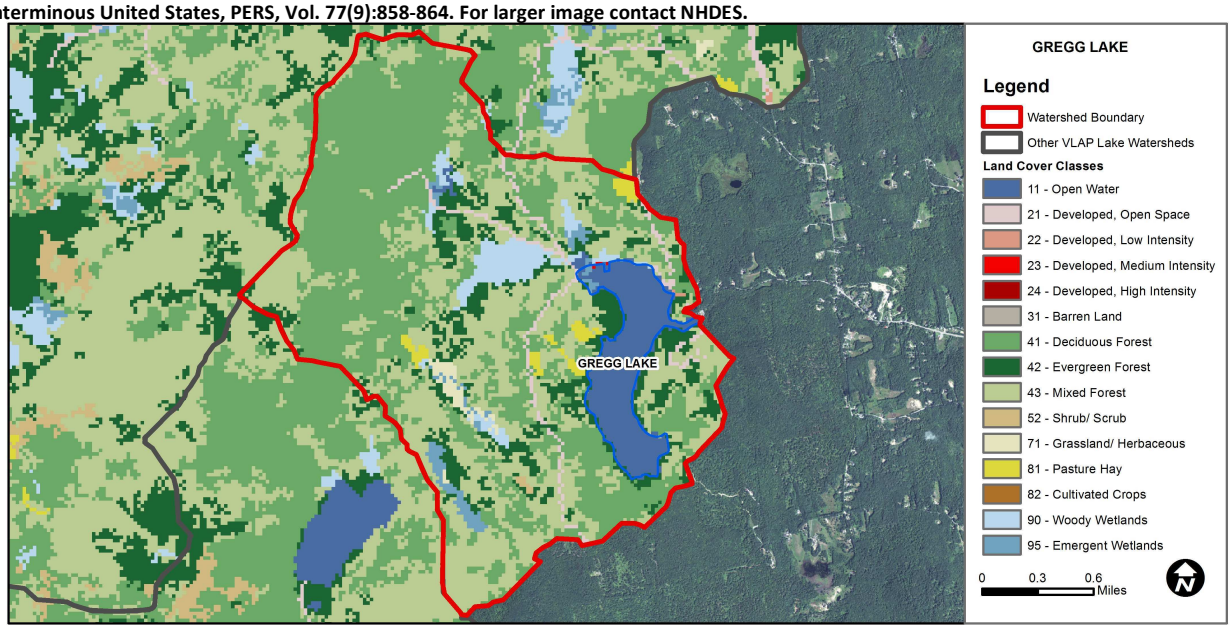
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Cautionary	There are < 10 samples with 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Encouraging	There are < 10 samples with 0 exceedances of indicator. More data needed.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

GREGG LAKE - CAMP CHENOA BEACH	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
GREGG LAKE - TOWN BEACH	Escherichia coli	Cautionary	There are no geometric means and there is one single sample exceedance. More data needed.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	7.36	Barren Land	0	Grassland/Herbaceous	0.72
Developed-Open Space	1.97	Deciduous Forest	40.56	Pasture Hay	1.17
Developed-Low Intensity	0.03	Evergreen Forest	10.39	Cultivated Crops	0
Developed-Medium Intensity	0.03	Mixed Forest	33.02	Woody Wetlands	3.25
Developed-High Intensity	0	Shrub-Scrub	0.1	Emergent Wetlands	1.41

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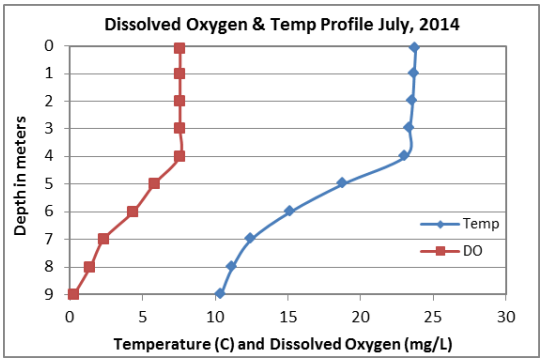
2014 Data Summary

Observations and Recommendations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels were average in July, decreased from 2013, and were slightly less than the state median. Historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years.
- **Conductivity/Chloride:** Deep spot, Inlet and Outlet conductivity levels were low and less than the state median. Historical trend analysis indicates relatively stable epilimnetic conductivity with moderate variability between years.
- **E. coli:** White Birch Point E. coli levels were much less than state standards for surface waters and public beaches.
- **Total Phosphorus:** Epilimnetic (upper water layer) phosphorus levels were low, remained stable from 2013, and were much less than the state median. Historical trend analysis indicates highly variable epilimnetic phosphorus since 2005. Metalimnetic (middle water layer) phosphorus levels were low, and Hypolimnetic (lower water layer) phosphorus levels slightly elevated. Inlet phosphorus levels were also slightly elevated, but within an average range for that station. Outlet phosphorus levels were low.
- **Transparency:** Transparency was good, better than the state median, and the best measured since 2009. Historical trend analysis indicates highly variable transparency since 2005.
- **Turbidity:** Epilimnetic and metalimnetic turbidity levels were low. Hypolimnetic turbidity was slightly elevated. Inlet and Outlet turbidities were low.
- **pH:** Epilimnetic pH was within the desirable range 6.5-8.0 units, however metalimnetic and hypolimnetic turbidity was less than desirable. Historical trend analysis indicates highly variable epilimnetic pH. Inlet and Outlet pH levels were also less than desirable.
- **Recommended Actions:** Increase monitoring frequency to once per month during the summer, typically June, July and August. This will allow better assessment of seasonal water quality and historical water quality trends, and decrease variability among data. Overall, water quality fluctuates between low and average ranges. Keep up the great work.



Station Name	Table 1. 2014 Average Water Quality Data for GREGG LAKE								
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	2.10	4.14	23.3		3	4.63	5.75	0.76	6.65
Metalimnion			23.4		7			0.51	5.87
Hypolimnion			26.1		16			1.40	5.81
Inlet			15.7		18			0.79	5.72
Outlet			22.7		5			0.74	6.39
White Birch Point				10					

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data highly variable.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.